



## IDENTIFYING DATA

### Physics: Physics 1

Subject	Physics: Physics 1			
Code	O07G410V01103			
Study programme	(*)Grao en Enxeñaría Aeroespacial			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	1st
Teaching language	Spanish			
Department				
Coordinator	Cerdeiriña Álvarez, Claudio			
Lecturers	Cerdeiriña Álvarez, Claudio González Salgado, Diego Troncoso Casares, Jacobo Antonio			
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General description				

## Competencies

Code	
A1	(*)Que os estudantes demostrasen posuír e comprender coñecementos nunha área de estudo que parte da base da educación secundaria xeral, e adóitase atopar a un nivel que, aínda que se apoia en libros de texto avanzados, inclúe tamén algúns aspectos que implican coñecementos procedentes da vangarda do seu campo de estudo
B2	(*)Planificación, redacción, dirección e xestión de proxectos, cálculo e fabricación no ámbito da enxeñaría aeronáutica que teñan por obxecto, de acordo cos coñecementos adquiridos segundo o establecido no apartado 5 da orde CIN/308/2009, os vehículos aeroespaciais, os sistemas de propulsión aeroespacial, os materiais aeroespaciais, as infraestruturas aeroportuarias, as infraestruturas de aeronavegación e calquera sistema de xestión do espazo, do tráfico e do transporte aéreo.
C2	(*)Comprensión e dominio dos conceptos básicos sobre as leis xerais da mecánica, termodinámica, campos e ondas e electromagnetismo e a súa aplicación para a resolución de problemas propios da enxeñaría.
D1	(*)Capacidade de análise, organización e planificación
D3	(*)Capacidade de comunicación oral e escrita na lingua nativa
D4	(*)Capacidade de aprendizaxe autónoma e xestión da información
D5	(*)Capacidade de resolución de problemas e toma de decisións
D6	(*)Capacidade de comunicación interpersonal
D8	(*)Capacidade de razoamento crítico e autocrítico

## Learning outcomes

Expected results from this subject	Training and Learning Results		
- Knowledge, understanding of the basic principles of the Physics and his application to the analysis and to the resolution of problems of engineering	A1		D1 D3 D6 D8
- Knowledge, understanding and application of the general laws of the Classical Mechanics, with special upsetting in the relative movements, the cinematic and dynamics of the point, the theorems of the quantity of movement and of the moment kinetical, and the cinematic, static and dynamics of the rigid solid.	B2	C2	D4 D5 D6

## Contents

Topic
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1) Basic vectorial calculus.	<ul style="list-style-type: none"> <li>- Scalar and vectorial magnitudes.</li> <li>- Operations with vectors.</li> <li>- Rectangular coordinates, cylindrical and spherical.</li> </ul>
2) Cinematics	<ul style="list-style-type: none"> <li>- Position and velocity vector.</li> <li>- Angular velocity and angular acceleration. Tangential and normal accelerations.</li> <li>- Relative movement. Galileo transformations. Relative velocity and acceleration.</li> <li>- Components of the acceleration; drang, centrifugal and Coriolis acceleration.</li> </ul>
3) Particle dynamics	<ul style="list-style-type: none"> <li>- Newton Laws.</li> <li>- Forces in the nature; gravitation, Coulomb force, Elastic force, and frictional force.</li> <li>- Inertial and non inertial reference systems.</li> <li>- Linear and angular moment. Kinetic energy. Work and potential energy. Conservative forces.</li> </ul>
4) Dynamics of a system of particles. Rigid body	<ul style="list-style-type: none"> <li>- Systems of particles; center of mass. Internal and external forces.</li> <li>- Central forces; planetary movement.</li> <li>- Centre of masses and moment of inertia.</li> <li>- Dynamic of the rigid body.</li> <li>- Flat movement and rolling.</li> </ul>
5) Harmonic Movement	<ul style="list-style-type: none"> <li>- Harmonic oscillator.</li> <li>- Simple and physical pendulum.</li> <li>- Damped and forced oscillations.</li> <li>- Resonance</li> </ul>

### Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	1	1	2
Master Session	39	46.8	85.8
Integrated methodologies	0	2	2
Autonomous troubleshooting and / or exercises	0	45.7	45.7
Laboratory practises	12	0	12
Short answer tests	1	0	1
Long answer tests and development	1.3	0	1.3
Troubleshooting and / or exercises	0.2	0	0.2

\*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

### Methodologies

	Description
Introductory activities	It will do an introduction of the contents of the *asignatura as well as of the educational methodologies to develop
Master Session	They will expose the theoretical contents and will apply for the solution of concrete problems
Integrated methodologies	Will carry out procedures that integrate the contents with the object that the student purchase the competitions posed
Autonomous troubleshooting and / or exercises	They will pose problems in class for his resolution of autonomous form
Laboratory practises	Will carry out practices of laboratory about the main contents of the course. His realisation is indispensable to surpass the *asignatura.

### Personalized attention

Methodologies	Description
Integrated methodologies	It will treat that the procedures carried out in the context of the integrated methodologies will be carried out in an individualized way
Laboratory practises	In the practices of laboratory will do a personalised follow-up of each student

### Assessment

Description	Qualification	Training and Learning Results

Laboratory practises	To pass the subject it is necessary to realise the practices of laboratory. It will evaluate by means of continuous evaluation during the realisation of the practices.	5	A1	C2	D1 D4 D6 D8
Short answer tests	It will evaluate by means of a proof of short answer the understanding and command of the contents of the subject.	40	A1	C2	D1 D3 D4 D8
Long answer tests and development	It will evaluate by means of a series of problems that the student has to resolve by herself/himself to show the understanding reached of the subject basic concepts.	53	A1	B2 C2	D1 D3 D4 D5 D8
Troubleshooting and / or exercises	The student will resolve a series of problems by herself/himself that will present in class	2		C2	D3 D6

### Other comments on the Evaluation

The system of evaluation of June-July is the same that the one of December-January, keeping the qualifications obtained corresponding to the resolution of problems and/or exercises and of assistance and participation.

Dates of evaluation:

The calendar of examinations approved officially by the Xunta of degree of GEA finds published in the page web:

<http://aero.uvigo.es/gl/docencia/exames>

Students must make the laboratory practices in order to pass the subject.

### Sources of information

Tipler, Paul Allen, **Física**, Third,

Serway, Raymond; Berchner, Robert J., **Física para Ciencias e ingeniería**, Fifth,

Marion, Jerry B., **Dinámica Clásica de las Partículas y Sistemas**, First,

Goldstein, Herbert, **Mecánica Clásica**, First,

González Hernández, Félix A., **La Física en Problemas**, First,

### Recommendations

#### Subjects that continue the syllabus

Physics: Physics 2/O07G410V01202

#### Subjects that are recommended to be taken simultaneously

Mathematics: Linear algebra/O07G410V01102

Mathematics: Calculus 1/O07G410V01101

### Other comments

The realisation of the practices of laboratory is indispensable to surpass the \*asignatura